

REMARKS

Claims 1-24 have been amended. Upon entry of this amendment, claims 1-24 will remain pending.

All claims have been amended to make minor editorial changes. Claim 1 has been amended in order to change the ratio of the free fatty acid to sorbitol to at least 7:1. Basis for this amendment is found at page 7, line 12 of the application as originally filed.

Claims 23-24 have been amended to make these claims process claims, rather than product-by-process claims.

Claims 1-5, 8-11, 13-15, 17-18 and 20 have been rejected under 35 U.S.C. §102(b) as being clearly anticipated by U.S. Patent no. 5,458,910 (Greutzmacher et al.). This rejection is respectfully traversed and reconsideration is requested for the reasons which follow.

The present invention relates to a process for preparing a mixture of sorbitol fatty acid esters and sorbitol anhydride fatty acid esters. The process includes the step of reacting a reaction mixture which is essentially free from water, comprising sorbitol and at least one free fatty acid. The molar ratio of free fatty acid to sorbitol is at least 7:1. The reaction is carried out at a temperature and for a time sufficient to effect an average degree of sorbitol hydroxyl substitution of from about 3 to about 5.5 fatty acid groups per sorbitol molecule. The reaction product is a mixture including sorbitol fatty acid esters and sorbitol anhydride fatty acid esters.

Greutzmacher et al. mentions, at col. 6, lines 1-8 that the sorbitol fatty acid tetraester of Greutzmacher et al. can be prepared by a variety of methods including the acylation of sorbitol with a fatty acid or a mixture of fatty acids. Thus, Greutzmacher et al. recognizes that its low calorie fat substitute can be made by acylation of sorbitol with a fatty acid. However, Greutzmacher et al. provides no further details on this process. As a result, Greutzmacher et al. does not teach or suggest the following limitation of claim 1 of the present application:

(1) a molar ratio of free fatty acid to sorbitol of at least 7:1.

Accordingly, claims 1-5, 8-11, 13-15, 17-18 and 20 are all novel over Greutzmacher et al. for at least this reason. Favorable consideration and withdrawal of the rejection of claims 1-5, 8-11, 13-15, 17-18 and 20 under 35 U.S.C. §102(b) is requested for at least this reason.

Claims 1-24 are also considered to be unobvious over Greutzmacher et al. since Greutzmacher et al. does not provide any details on the specific reaction conditions (e.g. time, temperature, molar ratio of fatty acid to sorbitol, fatty acids substantially free of oxidative

degradation products) for the reaction of a free fatty acid with sorbitol. Rather, Greutzmacher et al. only provides details for a reaction of a fatty acid alkyl ester with sorbitol. See col. 6, line 28. Also, all examples of Greutzmacher et al. employ fatty acid alkyl esters and not free fatty acids. Accordingly, no further details of the presently claimed process can be learned from Greutzmacher et al. since Greutzmacher et al. only goes into detail about a different process, wherein a fatty acid alkyl ester is used as a reactant, instead of a free fatty acid, as claimed in the present claims.

Claims 1-9, 12, 15, 19 and 21-24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent no. 3,951,945 (Heeson et al.). This rejection, at least insofar as it applies to claims 1-9, 12, 15, 19 and 21-24, as amended, is respectfully traversed and reconsideration is requested for the reasons which follow.

In one aspect, Heeson et al. relates to a process for the preparation of carboxylic acid esters of polyalcohols. In this process, free fatty acids may be reacted with polyalcohols such as sorbitol, in the presence of a fatty acid soap, at a temperature of 100-190°C, while simultaneously eliminating water formed during the reaction. See e.g. claim 1 of Heeson et al. However, Heeson et al. also teaches that the molar ratio of polyalcohol to fatty acid is between 4:1 and 1:5. See e.g. col. 3, lines 33-40 and claim 8 of Heeson et al. Thus, the highest ratio of free fatty acid to sorbitol disclosed by Heeson et al. is 5:1. All claims of the present application require a minimum ratio of free fatty acid to sorbitol of at least 7:1. Thus, this element of all claims of the present application is not disclosed by Heeson et al.

Applicant respectfully submits that the Official Action does not set forth a *prima facie* case of obviousness in support of the rejection under 35 U.S.C. § 103(a). According to M.P.E.P. § 2143,

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. [*Citation omitted.*]

Thus, since the ratio of free fatty acid to sorbitol of at least 7:1 is not disclosed in Heeson et al., the Examiner has not made out a case of *prima facie* obviousness over Heeson et al., taken alone.

Moreover, the primary focus of Heeson et al. is to minimize the production of anhydrocompounds in the reaction. See e.g. col. 1, lines 36-43, col. 2, line 58 to col. 3, line 10 and col. 3, lines 60-63 of Heeson et al. As a result, the skilled person, reading Heeson et al. would not increase the ratio of free fatty acid to polyalcohol beyond the maximum of 5:1 taught by Heeson et al., since even at a ratio of 5:1, already a large percentage of the undesirable anhydrocompounds are appearing.

Specifically, Example XIII of Heeson et al. employs a ratio of free fatty acid to polyalcohol of 5:1, with the result being conversion of 18.1% of sorbitol to anhydrocompounds. See Table C bridging cols. 9-10 of Heeson et al. Every other example of the invention in Heeson et al. appears to result in the conversion of less than 10% of sorbitol to anhydrocompounds. Moreover, it is clear from, for example, comparative example a (col. 9 of Heeson et al.) and col. 2, lines 63-65 of Heeson et al., that Heeson et al. considers conversion of 15-18.3% of sorbitol to anhydrocompounds to be an undesirable result.

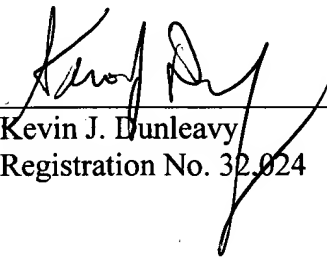
Accordingly, from Example XIII of Heeson et al., it is apparent that higher ratios of fatty acids to sorbitol would result in higher degrees of conversion of sorbitol to the undesirable anhydrocompounds, a fact that is confirmed with reference to the examples of the present application. Thus, the skilled person would be led away from using ratios of free fatty acid to sorbitol of at least 7:1 by the teachings of Heeson et al. in order to avoid higher conversions of sorbitol to anhydrocompounds, and thus would not arrive at the present invention, as claimed.

Accordingly, claims 1-9, 12, 15, 19 and 21-24 are considered to be unobvious over Heeson et al. for at least these reasons. Favorable consideration and withdrawal of the rejection of claims 1-9, 12, 15, 19 and 21-24 under 35 U.S.C. §103(a) is requested.

The Commissioner is authorized to charge any additional fees associated with this response or credit any overpayment, to Deposit Account No. 50-0462.

Respectfully submitted,

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